

REMARKS

The Applicants are filing this Response in response to an Office Action dated May 1, 2009. At the time of the Office Action, claims 1-25 were pending. No amendments or cancelations are made by way of the present Response. Therefore, claims 1-25 remain pending. Based on the following remarks, the Applicants assert that all pending claims are in condition for allowance.

In the Office Action, the Examiner rejected claim 22 under 35 U.S.C. § 112 as allegedly failing to comply with the written description requirement. Further, the Examiner rejected claims 1-4, 10-13, 18-21, 24 and 25 under 35 U.S.C. § 102(b) as allegedly being anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as allegedly being obvious over, U.S. Patent No. 5,403,639 to Belsan (hereinafter “Belsan”). The Examiner also rejected claims 5-9, 14-17 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Belsan in view of U.S. Patent Publication No. 2007/047358 by Lee et al., (hereinafter “Lee”). The Examiner rejected claim 22 under 35 U.S.C. § 103(a) as being unpatentable over Belsan in view of U.S. Patent Publication No. 2003/0158999 by Hauck (hereinafter “Hauck”). These rejections are discussed in detail below.

As an initial matter, the Examiner stated that “[w]hen responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.” Office Action, p. 12. The Applicants appreciate the Examiner’s need to locate the appropriate paragraphs cited and, thus, have specifically cited to precise paragraph numbers (when present in a document) or to column/page and line numbers (when paragraph numbers are not present).

Claim Rejections under 35 U.S.C. § 112, First Paragraph

With respect to the rejection of claim 22 under 35 U.S.C. § 112, the Examiner stated that “claim 22 recites the ‘a cache mirror’ which is not disclosed in the specification. Office Action, p. 3. The Applicants respectfully traverses this

rejection. To reject a claim under the first paragraph of 35 U.S.C. § 112, the Examiner has the burden to establish a reasonable basis to question the enablement provided for the claimed invention. *In re Wright*, 999 F.2d 1557, 1562, 27 U.S.P.Q.2d 1510, 1513 (Fed. Cir. 1993). If the specification contains a teaching of the manner and process of making and using an invention in terms corresponding in scope to those used in the claims, then the claims are in compliance with the enablement requirement of the first paragraph of 35 U.S.C. § 112. *See* M.P.E.P. § 2164.04. In other words, the only standard as to whether a claim is enabled by the specification is whether the experimentation needed to practice the invention is undue or reasonable. *See Mineral Separation v. Hyde*, 242 U.S. 261, 270 (1916); M.P.E.P. § 2164.01.

Claim 22 was fully enabled at the time of filing.

As a preliminary matter, the Applicants respectfully note that the claim does not recite “a cache mirror,” as asserted by the Examiner. Instead, the claim recites, *inter alia*, “the controller comprising at least two controller units; and a mirror connection between the at least two controller units.” This recitation is clearly supported by the present Specification and Figures. As stated in the Specification, “[t]he depicted storage system 500 includes two controllers 510 that are mutually connected to a storage drives 506 and 508, for example arrays of disk drives.” Specification, para. [0039]. Further, Fig. 5 clearly shows the two controllers 506 and 508 in a single cabinet 502, each controller having a cache 512, and a specific connection between the controllers [510] labeled “CACHE MIRROR PORT.”

Accordingly, one of ordinary skill in the art would understand the recited elements to be fully enabled at the time of filing, i.e., without requiring undue experimentation. For these reasons, the Applicants respectfully request withdrawal of the rejection under the first paragraph of 35 U.S.C. § 112.

Claim Rejections under 35 U.S.C. §§ 102/103

With regard to the rejections of independent claims 1, 10, 18, 24 and 25 under 35 U.S.C. § 102, or in the alternative under 35 U.S.C. § 103, the Examiner focused on claim 1, and asserted that the same arguments applied to independent claims 10, 18, 24, and 25. *See* Office Action, pp. 4-5. The Applicants respectfully traverse this rejection.

Anticipation under 35 U.S.C. § 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under 35 U.S.C. § 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under 35 U.S.C. § 102, a single reference must teach each and every limitation of the rejected claim. *Atlas Powder v. E.I. duPont de Nemours & Co.*, 750 F.2d 1569, 224 U.S.P.Q. 409 (Fed. Cir. 1984). The prior art reference also must show the *identical* invention “*in as complete detail as contained in the ... claim*” to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989) (emphasis added). Accordingly, the Applicants need only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter.

Further, if the Examiner relies on a theory of inherency to make a combined rejection under both 35 U.S.C. §§ 102 and 103, the extrinsic evidence “must make clear that the missing descriptive matter is *necessarily present* in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.” *In re Robertson*, 49 U.S.P.Q.2d 1949, 1950-51 (Fed. Cir. 1999) (emphasis added); *See also* M.P.E.P. § 2112(IV) (noting that “the Examiner must provide rationale or evidence tending to show inherency”). As further noted in *Robinson*, “[t]he mere fact that a certain thing *may* result from a given set of circumstances is not sufficient.” *Robertson*, 49 U.S.P.Q.2d at 1951. In relying upon the theory of inherency, the

Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art. *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). The Examiner, in presenting the inherency argument, bears the evidentiary burden and must adequately satisfy this burden. *See id.*

Independent claims 1, 10, 18, 24, and 25 are not anticipated by Belsan.

Independent claim 1 recites, *inter alia*, “a plurality of storage devices contained within the cabinet of at least three different and distinct *controller-to-storage device bus interface technology types*,” and “a controller contained within the cabinet and coupled to the storage device plurality that executes hierarchical storage management and selectively controls usage of storage according to the *different and distinct controller-to-storage device bus interface technology type*.” (Emphasis added). As disclosed in the specification, and as would be clearly understood by one of ordinary skill in the art, a *controller-to-storage device bus interface technology type* is a type of bus used to interface a storage device to a controller, such as Small Computer Systems Interface (SCSI), Fibre Channel (FC), and Serial AT-Attached (SATA). *See* Specification, para. [0027]; para. [0038] (noting that an “embodiment includes relatively higher performance Small Computer Systems Interface (SCSI) and/or Fibre Channel (FC) disks supplying storage for a first level of hierarchical storage 506 and relatively lower performance Serial AT-attached (SATA) disks supplying storage for a second level of hierarchical storage 506.”).

In contrast, Belsan does not teach, disclose, or even imply the use of “three different and distinct controller-to-storage device bus interface technology types.” Instead, Belsan discloses storage units that appear to contain a single controller-to-storage device bus interface technology type. *See* Belsan, col. 4, ll. 18-22 (stating that “[t]he file server system 1 is connected to at least one data processor 2 by a *data channel 8* which functions to exchange data and control information between the data processor 2 and the file server system 1.”) (emphasis added); Fig. 1. Apparently in

relation to this claim element, the Examiner asserts that “[t]he data storage and management capability can include changing the format of the data stored to accommodate various combinations of heterogeneous data processors” (col. 2, line 18-22)).” Office Action, p. 4 (emphasis in original). However, nothing in this assertion, or in the corresponding text cited from Belsan, teaches, discloses, or even appears to be relevant to a controller-to-storage device bus interface technology type. Further, the Examiner apparently ignores the claim element, “three different and distinct controller-to-storage device bus interface technology types,” asserting “that three different are ‘cache’, ‘disk drive array’ and ‘magnetic tape cartridge.’” Office Action, p. 4 (emphasis in original). The Applicants respectfully note that all of the units described by the Examiner are devices and none of these devices are controller-to-storage unit bus interface types. For at least this reason, Belsan cannot anticipate this element in claim 1 or the similar elements in claims 10, 18, 24, and 25.

Further, Belsan does not disclose “a controller contained within the cabinet and coupled to the storage device plurality that executes hierarchical storage management and selectively controls usage of storage according to the different and distinct controller-to-storage device bus interface technology type,” as recited in claim 1. Indeed, Belsan gives no indication that the controller disclosed is even capable of accessing multiple types of controller-to-storage bus interface technologies. See Belsan, col. 2, l. 46-col. 3, l. 25. For at least this additional reason, Belsan cannot anticipate claim 1 or claims 10, 18, 24, and 25.

With respect to the combined rejection under 35 U.S.C. §§ 102/103, the Examiner is apparently alleging that the claim elements discussed above are inherent in Belsan. However, the Applicants respectfully assert that nothing in Belsan, or in the Examiner’s statements, indicates that these claim elements are necessarily present in the teachings of Belsan. See *In re Robertson*, 49 U.S.P.Q.2d at 1950-51. More specifically, nothing in Belsan shows, indicates, or even implies the use of “three different and distinct controller-to-storage device bus interface technology types,” or a controller capable of accessing storage devices using three different and distinct types

of bus interfaces. Thus, the Applicants assert that one of ordinary skill in the art would not recognize these elements as inherent to Belsan. For at least these reasons, Belsan does not make claims 1, 10, 18, 24, and 25 obvious.

Finally, the Examiner admits that Belsan “comes shorting stating the single cabinet,” but alleges that “it would still have been obvious to enclose all these driver or storage in a single enclosure not only to protect it from contamination but to make it portable.” Office Action, p. 5. However, nothing in Belsan shows, indicates, or even implies that a single cabinet may be used to contain multiple storage units using different controller-to-storage device bus interface technology types. Neither of the reasons provided by the Examiner can be found in Belsan, nor does either reason provide an explanation of how the teaching of a single cabinet is *necessarily present* in Belsan. See *In re Robertson*, 49 U.S.P.Q.2d at 1950-51. Specifically, if each separate storage device used in Belsan were kept in its own, original cabinet, the units would be both protected from contamination and, in fact, more portable than if all three devices were placed in a single cabinet. Thus, claims 1, 10, 18, 24, and 25 are allowable over Belsan for at least this additional reason.

The Applicants respectfully request withdrawal of the rejections under 35 U.S.C. §§ 102/103.

For at least the reasons discussed above, the Applicants respectfully assert that claims 1, 10, 18, 24, or 25, and their respective dependent claims 2-4, 11-13, and 19-21 are neither anticipated nor made obvious by Belsan and, thus, are allowable over Belsan under either 35 U.S.C. §§ 102 or 103. Accordingly, withdrawal of the rejections under 35 U.S.C. §§ 102/103 is respectfully requested and an indication of the allowability of those claims is earnestly solicited.

Claim Rejections under 35 U.S.C. § 103(a)

Claims 5-9, 14-17 and 23 are patentable over Belsan and Lee, alone or in any sort of hypothetical combination.

The Applicants respectfully traverse the rejection of claims 5-9, 14-17 and 23 as allegedly being obvious over Belsan in view of Lee. Claims 5-9 ultimately depend from claim 1, claims 14-17 ultimately depend from claim 10, and claim 23 ultimately depends from claim 18. Therefore, each of these claims is allowable over Belsan for at least the reasons discussed with respect to the rejections under 35 U.S.C. §§ 102/103.

Further, Lee does not remedy the deficiencies of Belsan, either alone or in any hypothetical combination. Instead, Lee is directed to implementing a RAID 5 storage system using a log-structured approach. *See* Lee, col. 7, ll. 20-32. Lee does not disclose the use of “three different and distinct controller-to-storage device bus interface technology types,” or a controller capable of accessing storage devices using three distinct types of bus interfaces, nor does the Examiner allege that it does. Instead, the Examiner merely cites Lee for teaching small computer Systems Interface (SCSI) and/or Fiber Channel (FC) storage. *See* Office Action, p. 9.

Accordingly, the Applicants respectfully assert that claims 5-9, 14-17 and 23 are allowable over Belsan and Lee, alone or in any hypothetical combinations. Therefore, withdrawal of the rejection under 35 U.S.C. § 103 is respectfully requested and an indication of the allowability of those claims is earnestly solicited.

Claim 22 is patentable over Belsan and Hauck, alone or in any sort of hypothetical combination.

The Applicants respectfully traverse the rejection of claim 22 as allegedly being obvious over Belsan in view of Hauck. Claim 22 ultimately depends from claim 18 and, therefore, is allowable over Belsan for at least the reasons discussed with respect to the rejections under 35 U.S.C. §§ 102/103.

Further, Hauck does not remedy the deficiencies of Belsan, either alone or in any hypothetical combination. Instead, Hauck is directed to implementing a data storage system for maintaining cache coherency in a storage system. *See* Hauck, para. [0002]. Hauck does not disclose the use of “three different and distinct controller-to-storage device bus interface technology types,” or a controller capable of accessing storage devices using three distinct types of bus interfaces, nor does the Examiner allege that it does. Instead, the Examiner merely cites Hauck for teaching discloses a cache mirror connection between the at least two controller units. *See* Office Action, p.11.

Accordingly, the Applicants respectfully assert that claim 22 is allowable over Belsan and Hauck, alone or in any hypothetical combinations. Therefore, withdrawal of the rejection under 35 U.S.C. § 103 is respectfully requested and an indication of the allowability of those claims is earnestly solicited.

The Applicants Respectfully Request Withdrawal of the Rejections under 35 U.S.C. 103(a).

None of the references relied upon by the Examiner, either alone or in any sort of hypothetical combination, discloses all of the elements of claims 1, 10, and 18. Therefore, their respective dependent claims 5-9, 14-17, 22, and 23 are allowable over the cited references for at least the same reasons. Accordingly, withdrawal of the rejections under 35 U.S.C. § 103(a) is respectfully requested. Moreover, an indication of the allowability of those claims is earnestly solicited.

Conclusion

The Applicants respectfully assert that all pending claims are in condition for allowance. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve any other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

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